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EXAMINER	
ALBERTALLI, BRIAN LOUIS	
ART UNIT	**PAPER NUMBER**
2655	

DATE MAILED: 10/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/832,131	CHEN, JUIN-HWEY	
	Examiner	Art Unit	
	Brian L Albertalli	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,7,12-15 and 20* is/are rejected.

7)☒ Claim(s) *3-6,8-11,16-19 and 21-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/30/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claim 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claims 4, 8, 9, 17 are objected to because of the following informalities:

a) In claim 4, line 3, "and" should be –or--.

b) In claim 8, line 2, "vectors" should be –vector--.

c) In claim 9, line 3, "and" should be –or--.

d) In claim 17, line 3, "and" should be –or--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 7, 12-15, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Galand et al. (U.S. Patent 5,007,092).

In regard to claim 1, Galand et al. discloses a method for searching VQ codevectors, comprising:

(a) predicting the speech signal to derive a residual signal (Fig. 2, adaptive predictor 10 provides a residual signal r(n), column 1, lines 64-68);

(b) deriving a VQ input vector (e(n)) corresponding to a VQ error vector (e'(n)), based on the residual signal (r(n)) and a corresponding one of the N VQ codevectors (See Fig. 3, e(n) corresponds to error residual signal e'(n), since e(n) is used to find the closest entry in the CELP coder, then that entry is used to generate e'(n), column 2, lines 7-10 and lines 23-26. Input vector e(n) is derived from the residual signal r(n), column 1, line 68 through column 2, line 5; as well as a corresponding VQ codevector. That is, predicted residual rp(n), which is subtracted from residual signal r(n), is derived from error residual vector e'(n), which, in turn, is derived from a corresponding VQ codevector. See looping structure of system in Fig. 3, as well as the e'(n) loop in Fig. 4);

(c) repeating steps (b) for each of the N VQ codevectors to produce N VQ error vectors corresponding to the N VQ codevectors (e(n) is compared to each entry in the codebook, column 2, lines 7-10); and

(d) selecting the preferred VQ codevector as a VQ output vector corresponding to the residual signal based on the N VQ error vectors (the best matching entry in the codebook is selected as the output vector, column 2, lines 10-16. As discussed in reference to step (b) above, the codebook entry is selected according to e(n), which corresponds to the residual signal based on the error vectors e'(n)).

In regard to claim 2, Galand et al. discloses deriving a VQ error energy value corresponding to each of the N VQ error vectors of step (b), wherein step (d) comprises selecting one of the N VQ codevectors corresponding to a minimum error energy value

as the preferred VQ codevector (the lowest global block difference energy is selected to be the output codeword, column 2, lines 10-14).

In regard to claim 7, Galand et al. discloses:

(a)(i) predicting the speech signal to produce a predicted speech signal (adaptive predictor A(z) produces coefficients); and

(a)(ii) combining the predicted speech signal with the speech signal to produce the residual signal (See Fig. 2, 10, coefficients are combined with speech signal s(n) to produce residual signal r(n), column 1, lines 64-68).

In regard to claim 12, Galand et al. discloses a method for searching VQ codevectors, comprising:

(a) predicting the speech signal to derive a residual signal (Fig. 2, adaptive predictor 10 provides a residual signal r(n), column 1, lines 64-68);

(b) deriving N VQ input vectors each based on the residual signal and a corresponding one of the N VQ codevectors, each of the N VQ input vectors corresponding to one of N VQ error vectors (See Fig. 3, e(n) corresponds to error residual signal e'(n), since e(n) is used to find the closest entry in the CELP coder, then that entry is used to generate e'(n), column 2, lines 7-10 and lines 23-26. Input vector e(n) is derived from the residual signal r(n), column 1, line 68 through column 2, line 5; as well as a corresponding VQ codevector. That is, predicted residual rp(n), which is subtracted from residual signal r(n), is derived from error residual vector e'(n), which, in

turn, is derived from a corresponding VQ codevector. See looping structure of system in Fig. 3, as well as the e'(n) loop in Fig. 4); and

(c) selecting the preferred one of the N VQ codevectors as a VQ output vector corresponding to the residual signal, based on the N VQ error vectors (the best matching entry in the codebook is selected as the output vector, column 2, lines 10-16. As discussed in reference to step (b) above, the codebook entry is selected according to e(n), which corresponds to the residual signal based on the error vectors e'(n)).

In regard to claim 13, Galand et al. discloses deriving N VQ error energy values each corresponding to one of the N VQ error vectors of step (b), wherein said selecting step (c) comprises selecting one of the N VQ codevectors corresponding to a minimum one of the N error energy values as the preferred one of the VQ codevectors (the lowest global block difference energy is selected to be the output codeword, column 2, lines 10-14).

In regard to claim 14, Galand et al. discloses a system for searching VQ codevectors, comprising:

predictor logic adapted to predict the speech signal to derive a residual signal (Fig. 2, adaptive predictor 10 provides a residual signal r(n), column 1, lines 64-68);

an input vector deriver adapted to derive N VQ input vectors each corresponding to one of N VQ error vectors, based on the residual signal and a corresponding one of the N VQ codevectors (See Fig. 3, e(n) corresponds to error residual signal e'(n), since

e(n) is used to find the closest entry in the CELP coder, then that entry is used to generate e'(n), column 2, lines 7-10 and lines 23-26. Input vector e(n) is derived from the residual signal r(n), column 1, line 68 through column 2, line 5; as well as a corresponding VQ codevector. That is, predicted residual rp(n), which is subtracted from residual signal r(n), is derived from error residual vector e'(n), which, in turn, is derived from a corresponding VQ codevector. See looping structure of system in Fig. 3, as well as the e'(n) loop in Fig. 4); and

a selector adapted to select the preferred one of the N VQ codevectors as a VQ output vector corresponding to the residual signal, based on the N VQ error vectors (the best matching entry in the codebook is selected as the output vector, column 2, lines 10-16. As discussed in reference to step (b) above, the codebook entry is selected according to e(n), which corresponds to the residual signal based on the error vectors e'(n)).

In regard to claim 15, Galand et al. discloses an error-energy calculator to derive N VQ error energy values each corresponding to one of the N VQ error vectors, the selector being adapted to select one of the N VQ codevectors corresponding to a minimum one of the N VQ error energy values as the preferred one of the VQ codevectors (the lowest global block difference energy is selected in the CELP coder to be the output codeword, column 2, lines 10-14).

In regard to claim 20, Galand et al. discloses a predictor adapted to predict the speech signal to produce a predicted speech signal (adaptive predictor A(z) produces coefficients); and

a second combiner adapted to combine the predicted speech signal with the speech signal to produce the residual signal (See Fig. 2, 10, coefficients are combined with speech signal s(n) to produce residual signal r(n), column 1, lines 64-68).

Allowable Subject Matter

Claims 3-6, 8-11, 16-19 and 21-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose and would not suggest to one of ordinary skill in the art, the looping structure as defined in claims 3, 8, 16, and 21. Specifically, the prior art of record does not disclose combining an VQ input vector and a VQ codevector to produce an VQ error vector, then combining a noise feedback vector, produced by filtering the error vector, back with the residual signal to create the VQ input vector.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bhaskar (U.S. Patent 5,487,086) discloses a vector quantization system. Cuperman et al. (U.S. Patent 4,963,034) discloses a vector quantization coder that utilizes a backward predictive technique to modify the codebook.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L Albertalli whose telephone number is (703) 305-1817. The examiner can normally be reached on Mon - Fri, 8:00 AM - 5:30 PM, every second Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (703) 305-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BLA 9/23/04

SUSAN MCFADDEN
PRIMARY EXAMINER